Immunization ready reference for health workers

Ministry of Health & Family Welfare
Government of India
New Delhi

List of Contents

Vaccine Preventable Diseases

Childhood Tuberculosis

- A child with fever and/or cough for more than 2 weeks, with loss of weight or no weight gain
- History of contact with a suspected or diagnosed case of active tuberculosis

Polio

- Sudden onset of weakness and floppiness in any part of the body in a child less than 15 years of age.
- Paralysis in a person of any age in whom polio is suspected.

Diphtheria

- Sore throat, mild fever and gray patch or patches in the throat.
- Obstructed breathing due to membrane in the throat.

Pertussis (Whooping Cough)

- History of repeated and violent coughing, with any one of the following feature
- Cough persisting for two or more weeks, fits of coughing, cough followed by coughing or typical whoops in older infants

Neonatal Tetanus

- History of normal suck & cry during first 2 days of life
- Onset of illness between 3-28 days of life
- Inability to suck followed by stiffness of neck and body and/or jerking of muscles.

Measles

- History of fever with rash, with cough or running nose or red eyes

Japanese Encephalitis (JE)

- Acute onset of fever with change in mental status (such as confusion, disorientation or coma) and seizures.

National Immunization Schedule

TT Vaccination of Pregnant Women
• Early in pregnancy
• 4 weeks after first dose(1)

For infants	BCG	Hepatitis B	DPT	OPV	Measles
• At birth					
• 1 ½ months (6 weeks)					
• 2 ½ months (10 weeks)					
• 3 ½ months (14 weeks)					
• 10 – 12 months					

For children	DPT	OPV	Measles	JE	TT
• At 16 – 24 months					
• At 5 – 6 years					
• At 10 years					
• At 16 years					

REMEMBER

(1) If pregnant women have received 2 doses of TT within last 3 years, then only one dose of TT booster is given. 2nd or booster dose of TT should be given before 36 weeks of pregnancy. However, it may be given even if more than 36 weeks have passed. TT can be given to a woman in labour, if she has not previously received TT.

(2) Zero dose of Hepatitis B is only given within 24 hours after birth, and zero dose of OPV is given up to 15 days after birth

(3) If BCG is not given after birth then it can be given up to 12 months of age

(4) JE vaccine is given only in select endemic districts after the campaign.

(5) First dose of Vitamin A (1 ml) is given along with Measles vaccine at 10-12 months. 2nd to 9th doses of Vitamin A (2 ml) are given to children 1-5 years of age during biannual rounds.

Site and route of vaccination

Vaccine	Dose	Route	Site
TT	0.5 ml	Intra muscular	Upper arm
BCG	0.1 ml *	Intra dermal	Left upper arm
DPT# & Hep. B	0.5 ml	Intra muscular	Antero lateral mid thigh
OPV	2 drops	Oral	
Measles	0.5 ml	Sub cutaneous	Right upper arm
JE	0.5 ml	Sub cutaneous	Left upper arm

* Dose of BCG till one month of age is 0.05 ml

\# DPT 2nd booster at 5-6 years is given on upper arm

Positioning

B.C.G.

- The baby's right arm embraces the parent's back and is held under the parent's left arm.
- The baby's left arm and legs are controlled by the parent's right arm and hand.

D.P.T.

- One of the baby's arms embraces the parent's back and is held under the parent's arm.
- The other arm and legs are firmly controlled by the parent's hand.

Measles

- The baby's left arm embraces the parent's back and is held under the parent's right arm.
- The parents' hands firmly hold and control the baby's head and the baby's right arm.

Inject the vaccine at the correct site and use the correct route

Inject vaccine using steady pressure and withdraw needle at the angle of insertion

Do not massage/rub the injection site after giving injection

Points to Remember

BCG vaccine

- BCG can be given till one year of age
- There is no need to re-vaccinate the child even if no scar is formed.

DPT vaccine

- DPT can be given till 7 years of age
- There should be a minimum gap of 4 weeks between two doses of DPT
- DT has now been replaced by DPT in national immunization schedule

OPV vaccine

- OPV can be given till 5 years of age
- OPV and vitamin A can be given with DPT booster dose
- An infant can be breast fed immediately after giving OPV

Hepatitis B vaccine

- Hepatitis B and DPT vaccine cannot be mixed together or administered by the same syringe
- Birth dose of Hepatitis B vaccine is effective in preventing perinatal transmission of Hepatitis B infection if given within first 24 hours after birth

Measles vaccine

- Measles can be given till 5 years age
- Measles catch up campaigns are organized to vaccinate all children in an age group in a state/district with one dose of measles irrespective of previous vaccination status.
- Child must receive routine doses of measles vaccine according to immunization schedule irrespective of measles catch up campaign dose.

JE vaccine

- JE is a single dose vaccine, and if any child has received the vaccine during campaign, then there is no need to repeat the dose in RI
- Child can receive JE vaccine through RI till the age of 15 years

TT vaccine

- TT can be given during the first trimester of pregnancy or as soon as pregnancy is diagnosed.
- TT at the age of 10 and 16 years are to be given to both boys and girls

Vitamin A

- Total 9 prophylactic doses of vitamin A should be given till 5 years of age
- Vitamin A solution must be kept away from direct sunlight and can be used till expiry date. Bottle once opened should be used within 8 weeks of opening.
- For treating children with symptoms of vitamin A deficiency, administer 2 lac IU immediately after diagnosis and followed by another dose of 2 lac IU 1-4 weeks later

All vaccines

- DPT & Hepatitis B vaccines are given on antero lateral aspect of mid thigh to prevent damage to sciatic nerve
- For multi dose vaccines, there is no need to restart the schedule if more time has lapsed after previous doses. Rather only the remaining doses are to be administered at 4 weeks interval.

Maintaining Cold Chain

Proper cold chain maintenance is required at all levels because if the vaccines are exposed to too much heat, light or cold, they may be damaged and may lose their potency or effectiveness.

REMEMBER

- All vaccines are sensitive to heat.
- BCG and Measles vaccines are also sensitive to light exposure.
- Hepatitis B, DPT and TT vaccines lose their potency on freezing.
- At PHC level, all vaccines are stored in ILR for a period of one month at temperature of +2 to +8 ^{O}C.
- Vaccine carriers are used for transporting vaccines from PHC to immunization sessions and for storing them during the session.

Vaccine sensitivity to heat

- BCG *(after reconstitution)*
- OPV
- Measles
- DPT
- BCG *(before reconstitution)*
- TT, Hep B, JE

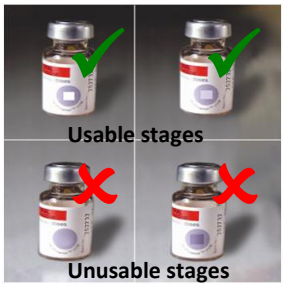
Most ↓ *Least*

Vaccine sensitivity to cold

- Hepatitis B
- DPT
- TT

Most ↓ *Least*

Checking heat damage (reading VVM)...



When the inner square is lighter than the outer circle, and if expiry date has not passed, then vaccine can be used.

Discard point: the colour of inner square matches with outer circle – **Do not use the vaccine**

Beyond the discard point: the colour of inner square is darker than outer circle - **Do not use the vaccine**

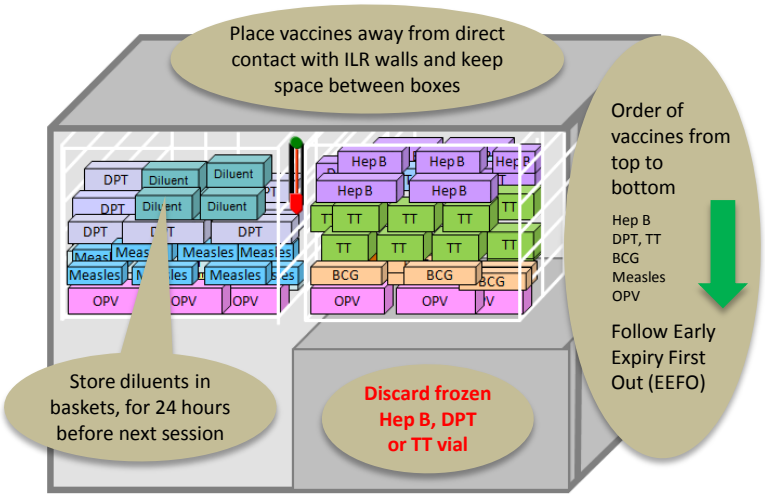
Using ILR and DF

At PHC level, ILRs' are used for storing all UIP vaccines

Make sure that all vaccines and diluents are stored at

+2 to +8^{O}C

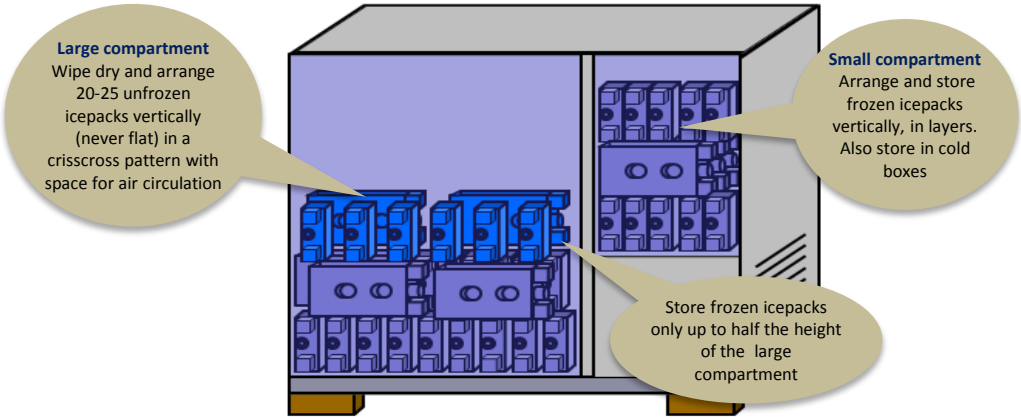
Monitor storage temperature twice a day (morning & evening)



REMEMBER

- **All vaccines must be kept in the basket of the ILR along with diluents.**
- **If baskets are not available, store vaccines (other than OPV and Measles) over two rows of empty ice packs kept flat on the platform of the ILR. OPV and Measles can be kept over two rows of empty ice packs on the floor of the ILR.**

At PHC level, Deep Freezers are used only for preparation of ice packs and are not to be used for storing UIP vaccines.



Using Vaccine Carrier

Packing the carrier...

- Condition the frozen ice packs: keep frozen ice packs in open till they sweat. Check conditioning by shaking ice pack and listening for the sound of water.
- Wipe the ice packs dry and place four conditioned ice packs against the sides of the carrier.
- Put required number of vaccine vials, diluent ampoules and dropper for OPV in zipper lock polythene bag and place it in the center of the carrier.
- Close the lid securely.

Check

- All four ice packs are conditioned
- Lid of carrier fits tightly
- Insulation of carrier (no cracks)

Never

- Drop or sit on the carrier
- Leave carrier in sunlight
- Leave the lid open once packed

Collect vaccines in the carrier on the session day. Vaccine carrier may not store vaccine effectively beyond 12 hours.

Unconditioned ice packs may damage freeze sensitive vaccines (DPT, TT and Hepatitis B)

During immunization session...

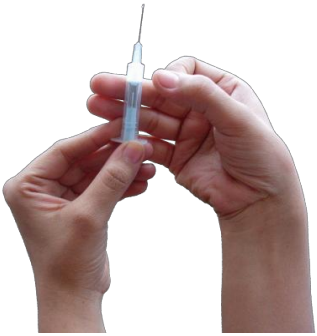
- Take one ice pack out of the carrier and place OPV and reconstituted vaccines (BCG, Measles and JE) on it.
- Ice pack once taken out, should not be put back in the carrier till the end of session.
- Never put freeze sensitive vaccines (DPT, TT, Hepatitis B) on ice pack

Using AD Syringes

- Use only AD (Auto Disabled) syringes for giving vaccinations.
- Select the correct syringe for the vaccine i.e. 0.1 ml AD syringe for BCG and 0.5 ml AD syringe for all other vaccines
- Check the packaging of the syringe. Don't use if the package is damaged, opened or expired.
- Tear the package from the plunger side and take out the syringe by holding its barrel.
- Do not move the plunger until you are ready to fill the syringe with vaccine.
- Remove the needle cap of the syringe, take the appropriate vaccine vial, invert the vial, and insert the needle into the vial through the rubber cap.

- Do not inject air into the vial as this will lock the syringe.
- Do not insert needle beyond the level of vaccine in the vial as this may draw air into the syringe.
- Do not touch the needle or rubber cap (septum) of the vial.

- Pull the plunger back slowly to fill the syringe. The plunger will automatically stop when the necessary dose of vaccine has been drawn (0.1 or 0.5 ml).
- In case air is drawn into the syringe – take out the needle, hold the syringe upright, tap the barrel to bring the bubbles towards the tip of the syringe and then carefully push plunger to expel the air bubble.

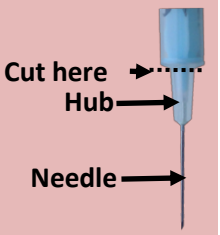


- Use 5 ml disposable syringes for reconstituting freeze dried vaccines (BCG, Measles and JE).
- Use separate syringes for reconstituting different vaccines.
- Never use the used syringe again as it may lead to AEFI.

Using Hub Cutter

- Hub cutter is used at the immunization session site for cutting hub and needle of the used syringes.
- It segregates infected sharps into a puncture proof container and thus prevent injury to service provider, beneficiary and community members.

1. Immediately after use, carefully insert the needle and hub of used syringe (AD or disposable) into the insertion hole.
2. Hold the syringe and use the other hand to clamp the handles till the hub is completely cut. The cut needle and hub will drop into the puncture proof container.
3. Place the plastic part of syringe in the red disposal bag.



- Also use hub cutter to store broken diluent ampoules and vaccine vials at the session site.
- Collect broken vials and ampoules on paper and put it in hub cutter after opening the lid.
- Never touch any sharp (cut needles, broken vials or ampoules).
- Never cut metal part of needle.

Immunization Waste Disposal

All waste generated during the immunization session is to be segregated, and returned back at the end of session, to the health facility, for disinfection and proper disposal.

Never leave or throw immunization waste at the session site

Never burn used syringes or any other immunization waste

Never store the waste at session site, sub center or facility

USE AT SESSION SITE:

- **Red disposal bag** to store (1) cut plastic part of syringes, (2) used empty or discarded unbroken vials
- **Black disposal bag** to store (1) needle caps, (2) syringe packaging
- **Hub cutter** to store, (1) cut hub and needle of syringes (2) broken vials and ampoules

Red disposal bag

Black disposal bag

Hub cutter

Injection Safety

- **Keep hands clean before giving injections**

  - Wash or disinfect hands before preparing injections
  - Cover any small cuts on service provider's skin
  - If the injection site is dirty, wash it with clean water
  - Avoid giving injections if the skin at injection site of the recipient is infected or compromised by local infection

- **Use sterile injection equipment, every time**
  - Always use new AD syringe for each injection and a new disposable syringe for reconstitution of freeze dried vaccines.

- **Prevent the contamination of vaccine & injection equipment**
  - Prepare each injection in a clean area where contamination from blood or body fluids is unlikely.
  - Never touch the needle of syringe or rubber cap of vaccine vial

  - Discard any needle that has touched any non-sterile surface
  - Do not rub the injection site after giving vaccine

  - Never use spirit swab or any other antiseptic to clean the injection site before giving injection.

- **Prevent needle-stick injuries**

  - Do not recap or bend needles
  - Anticipate sudden movement of child

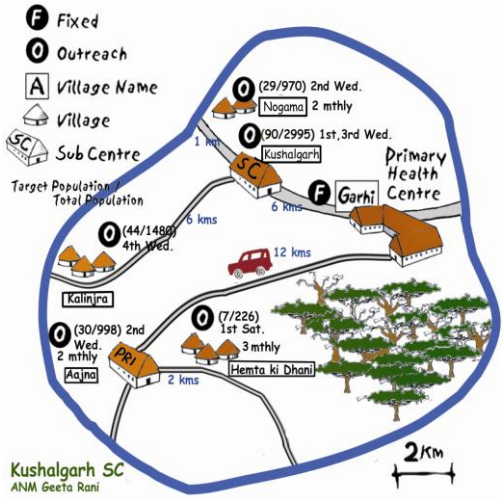
- **Practice safe storage and disposal of waste**
  - Cut all used syringes with hub cutter immediately after use
  - Store all infected sharps in hub cutter at the session site
  - Return all immunization waste at the end of session to health facility for proper disinfection and disposal.

Planning for Service Delivery

Step 1	List all the villages (and hamlets) included under the sub centre area.
Step 2	Mention the total population against each village (and hamlet) based on actual head count.
Step 3	Estimate and mention annual target of beneficiaries (pregnant women and infants)
Step 4	Write monthly target of beneficiaries (pregnant women and infants)
Step 5	Calculate total number of beneficiaries per month for each vaccine and vitamin A
Step 6	Based on the number of beneficiaries calculate the monthly requirement of vaccine vials and vitamin A
Step 7	Prepare a sub centre workplan (roster) mentioning names of villages and days when session are to be organized
Step 8	Prepare a map of sub centre, mentioning distance from PHC (cold chain point), different villages (and hamlets) included under the sub centre, days of immunization, population and number of target beneficiaries in each respective village.

Remember

- Sessions in villages (and hamlets) are to be planned on the basis of injection load:
  - 25-50 injections – one session/month
  - >50 injections – 2 sessions/month
  - <25 injections – every alternate month
- For hard to reach areas or those with population less than 1000, minimum 4 sessions should be held in a year (once every quarter).



Organizing Session

- Organize session at a proper location easily accessible to the community and beneficiaries.
- Prepare due list of beneficiaries in discussion with ASHA and anganwadi workers. Share due list with ASHA for mobilizing the identified beneficiaries to the session site.

- Welcome the beneficiaries and care-takers, and check the age, records (immunization card, counterfoils and MCH register) for due vaccinations.

Before immunizing ASK for…

- Age of beneficiary, card and last vaccine given
- Any current illness
- Any AEFI from last vaccine
- Any history of allergic reaction to any vaccine

Contraindications to immunization

- History of anaphylaxis or severe allergic reaction from any vaccine
- History of serious AEFI from any vaccine during previous vaccination
- High fever

Mild fever, diarrhea & cough are not contraindications for immunization

- Before preparing injection, check the vaccine vial for VVM, expiry date and freezing of freeze sensitive vaccines (DPT, TT and Hepatitis B).
- Use the entire quantity of diluents supplied with the freeze dried vaccines for reconstitution, and ensure that the diluents used are supplied by the same manufacturer.

- Use new 5 ml disposable syringes for reconstituting each vial of freeze dried vaccines.
- Mention time of reconstitution on the vaccine vial and use this reconstituted vaccine within the recommended time (4 hours for BCG and Measles, and 2 hours for JE vaccine). Discard any vaccine remaining after this time.

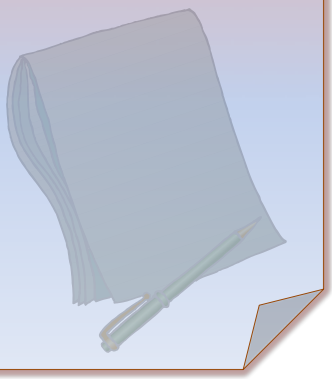
Adverse Events Following Immunization (AEFI)

An AEFI is a medical incident that takes place after an immunization, causes concern and is believed to be caused by immunization.

AEFI may occur due to program error or sensitivity to vaccine or it may occur coincidentally.

Events to be reported immediately and investigated

(1) Death, hospitalization, disability or other serious and unusual event that are thought by health worker or the public to be related to immunization.
(2) Event occurring in cluster
(3) Anaphylaxis
(4) Toxic shock syndrome
(5) Anaphylactoid or acute hypersensitivity reaction
(6) Encephalopathy
(7) Sepsis
(8) Any event where vaccine quality is suspected
(9) Acute flaccid paralysis (AFP)



Minor reactions due to vaccines which are not to be reported

Mild reaction	Treatment	When to report
Local reaction (pain, swelling, redness)	• Cold cloth at injection site • Give paracetamol	In case of an abscess
Fever > 38.5 ^{O}C	• Give extra fluids • Tepid sponging • Give paracetamol	When accompanied by other symptoms
Irritability, malaise and systemic symptoms	• Give extra fluids • Give paracetmol	When severe or unusual

Prevent AEFI

Check

- Expiry date & VVM of vaccines
- Expiry date of diluents
- Expiry date & packaging of syringes

Use

- Correct diluents
- New syringes for reconstitution
- New AD syringes for each vaccine

Mention

- Time of reconstitution on vials

Maintain

- Cold chain at session site

Discard

- Frozen 'T' series vaccines
- Reconstituted BCG & Measles after 4 hours and JE after 2 hours
- Vaccine with VVM in unusable stage
- Needles touched by finger

REMEMBER

(1) Ask beneficiaries to wait for half an hour after vaccination to observe for any AEFI

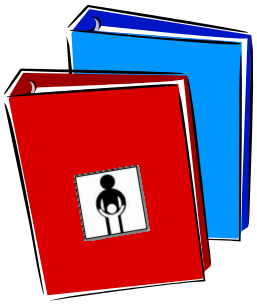
(2) Ask parents about the history of any adverse reaction following earlier vaccinations.

(3) Inform care givers about minor adverse events and how to deal with them

(4) Report deaths, injection site abscesses and other complications in monthly report. Nil report is also important.

(5) Report all serious AEFIs immediately to medical officer in-charge or supervisor .

Maintaining Records



- Each immunization given to the beneficiary should be correctly and completely recorded in the immunization card, counterfoil, tally sheet and tracking register.
- Maintain village wise mother and child tracking register and before each immunization session update the register to include new pregnancies and births from the records of ASHA and anganwadi workers.
- NEVER create a new entry in the register each time the beneficiary returns for subsequent vaccination .
- Issue a new immunization card to each new beneficiary or update the card of beneficiaries coming for subsequent vaccinations. Always keep updated counterfoils for record. Retain the counterfoil in tracking bag.
- Update the register at the end of session on the basis of counterfoils filled during the session. Prepare a due list of beneficiaries for the next session in that village (or area) on the basis of tracking register and counterfoils and give a copy to ASHA before leaving the village.
- Leave the list of children vaccinated during the session with ASHA and anganwadi worker along with your contact details. Ask them to be alert and inform in case of any AEFI.

Records to be maintained

- Counterfoils of immunization cards
- Mother and child tracking register
- Name based due list
- Tally sheets
- Coverage monitoring chart
- Monthly progress report

Benefits of counterfoils

- Preparing session wise name based due list of beneficiaries
- Estimating the vaccine and logistics requirement for next session
- Tracking the drop outs
- Providing correct information, in case immunization card of beneficiary is lost

Interpersonal Communication

Remind parents of 4 key messages …

What vaccine was given and what disease it prevents

When to come for next visit

What are the minor side effects and how to deal with them

To keep immunization card safe and to bring it along for the next visit

Fully immunize each child before its first birthday

REMEMBER

- Act respectfully towards the beneficiaries and care takers
- Praise care takers for bringing their children for immunization
- Keep information simple and clear
- Encourage parents and community members to ask questions
- Encourage parents to bring their children until fully vaccinated
- Inform and motivate community members about immunization
- Involve community members in deciding the place for session, identification of new beneficiaries and tracking of left outs and drop outs.

Community Self Monitoring Tool

Using "My Village My Home"...

Name of Infant (less than 1 yr)	DOB	Birth Wt.	BCG	OPV				DPT			Msl	Vit A '1'
				0	1	2	3	1	2	3		
26.												
25.												
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3.												
2.												
1.												
Example: Reena Kumari, d/o Bhim Kumar	20/1	2 kgs	7/2	7/2	21/3	11/4	9/5	21/3	11/4	9/5		

Instructions for using the tool:

- Names of all the infants of a village are written on a chart paper in the form of bricks of a house.
- Start with oldest infant as number 1, second oldest as number 2 and so on. Likewise keep on adding the names of newborns in subsequent upper rows.
- Write the name of the village, the year of head count and number of infants counted.
- As the infant completes the immunization, put colour in the related row with the name.
- Prepare this chart every year and hang it on the wall of AWC/Panchayat Bhawan in each village.

Immunization ready reference for health workers

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Developed with technical assistance from USAID/MCHIP